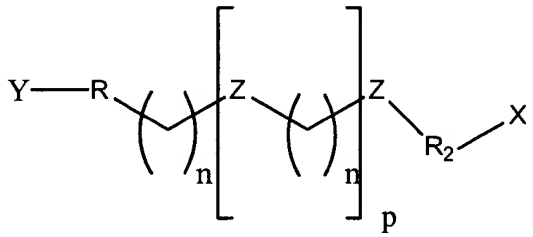
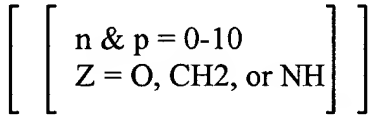
Claim Amendments

Claims 1-7 (Canceled).

Claim 8 (Currently Amended). A nanocrystal compound comprising ~~of~~ the following formula:



(I)



wherein n and p are independently 0 or an integer from 1 to 10, and

each Z is independently O, CH_2, or NH, with at least one Z being O; and

wherein Y represents a nanocrystal and X represents an organic compound capable of bonding to a detectable substance;

R is a bond or is selected from the group consisting of:

SH,

$O(CH_{2(n)}O)_nSH$,

$NH(CH_{2(n)}O)_nSH$,

$NH(CH_{2(n)}NH)SH$,

$S(CH_{2(n)}O)_nSH$, and

$S(CH_{2(n)}S)SH$; n is 1-10, with S being attached to the nanocrystal;

R_2 is a bond or selected from the group consisting of

carbonyl,

NH, SH,

CONH,

COO,

S,

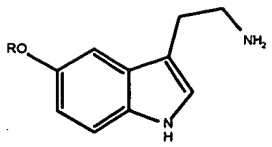
C_{1-10} alkyl,

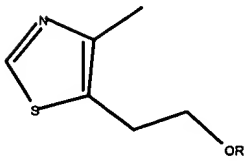
carbamate, and thiocarbamate; and wherein

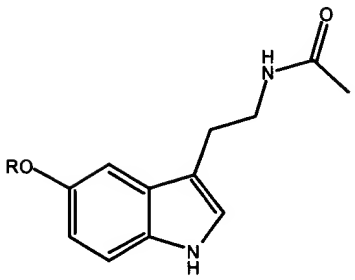
when n and p are 1 or more, the resulting carbon or carbon chain may be substituted.

Claim 9 (Previously Presented). The nanocrystal compound of claim 8, wherein the organic compound is selected from the group consisting of: seratonin or seratonin derivatives, cocaine analogues, phenyl tropane analogues, phenylisopropylamine derivatives, dopamine derivatives, melatonin derivatives, chlormethiazole derivatives, derivatives of RTI-4229-75, and derivatives of GBR 12935.

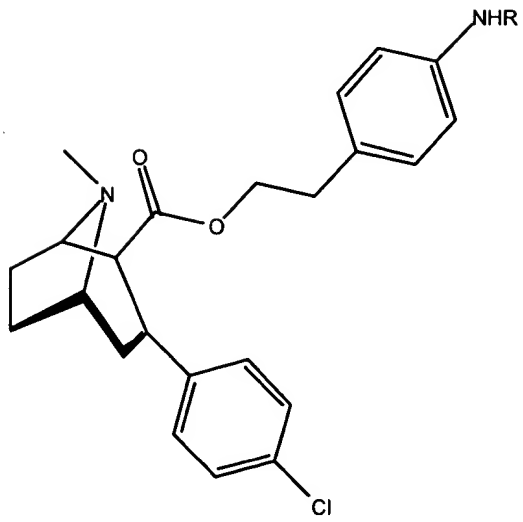
Claim 10 (Currently Amended). The nanocrystal compound of claim 8, wherein the organic compound is selected from the group consisting of:

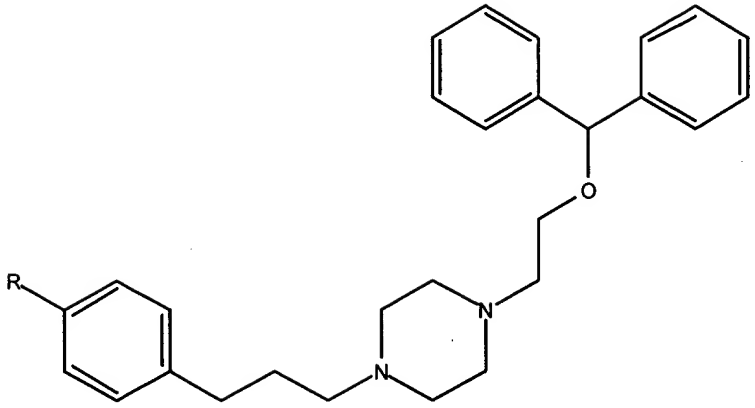






b2

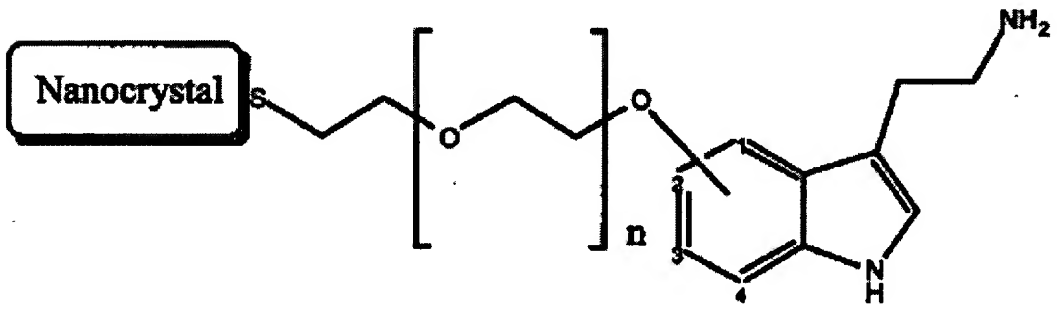




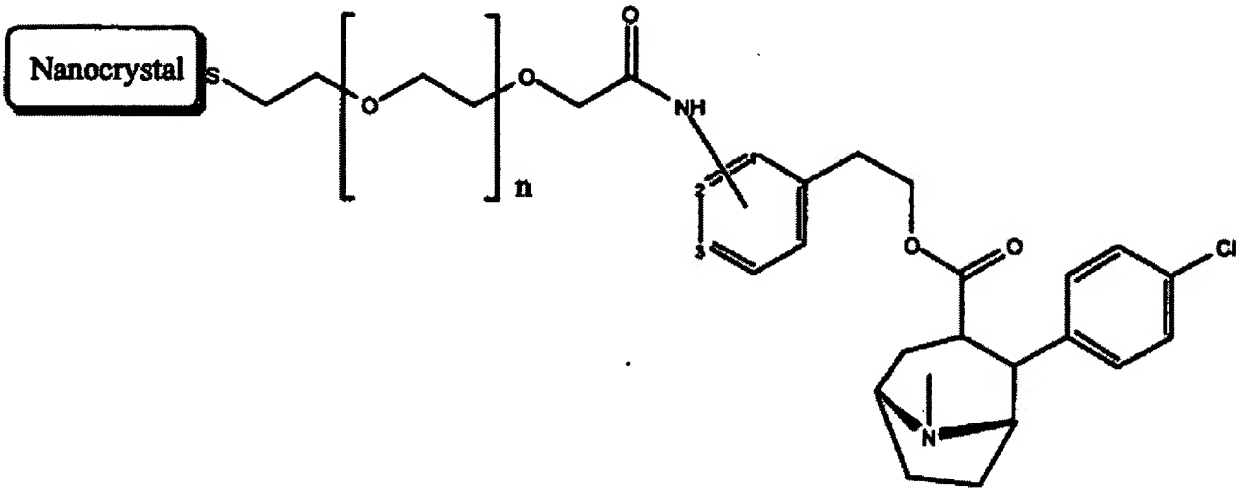
wherein R represents the attachment point to R_2 ~~the nanocrystal compound~~.

b2

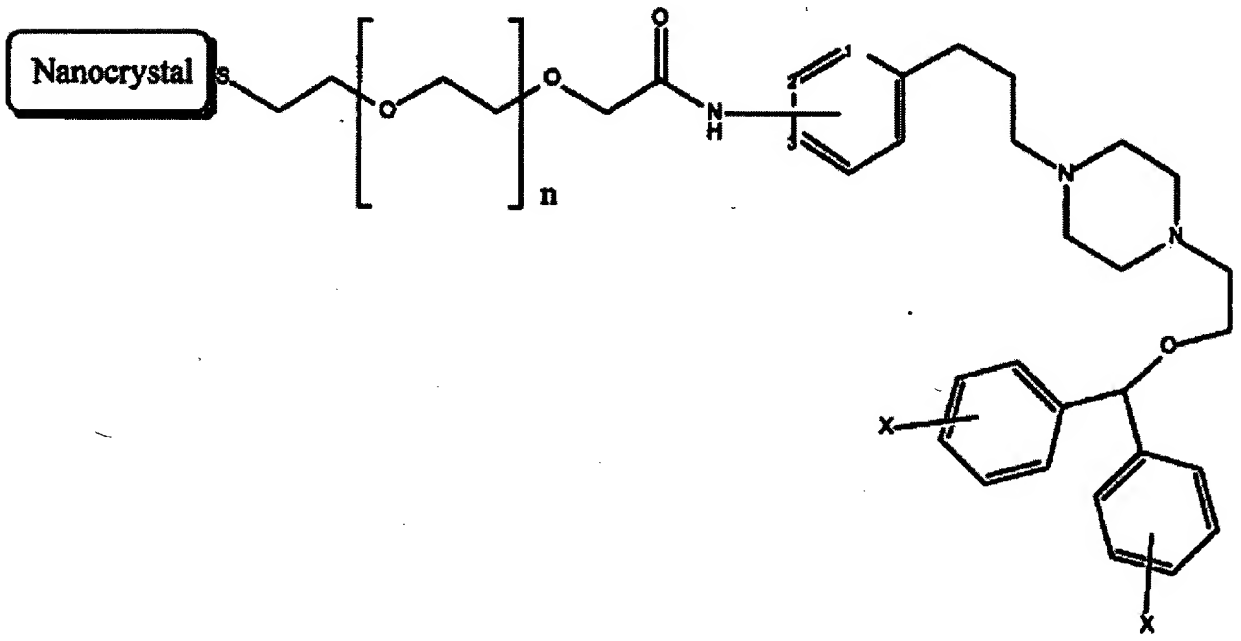
Claim 11 (Previously Presented). The nanocrystal compound of claim 8, selected from the group consisting of:



(II)

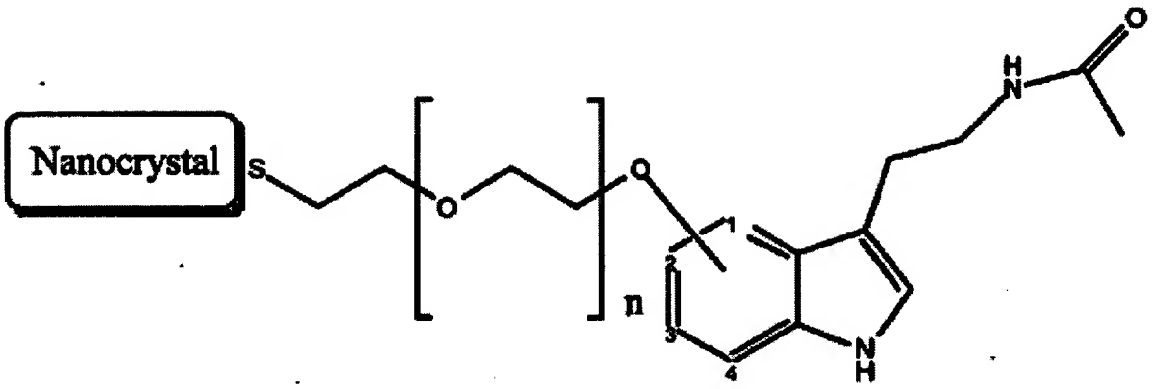


(III)

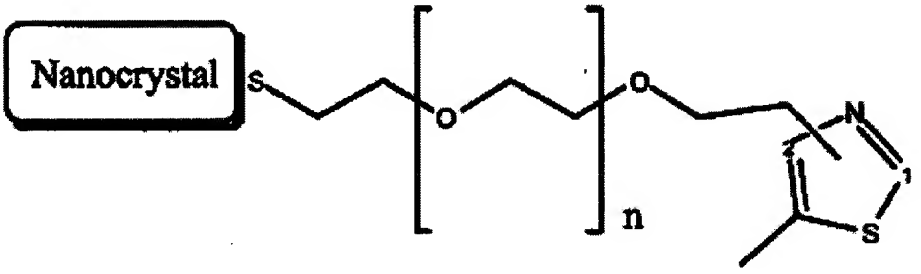


(IV)

b2

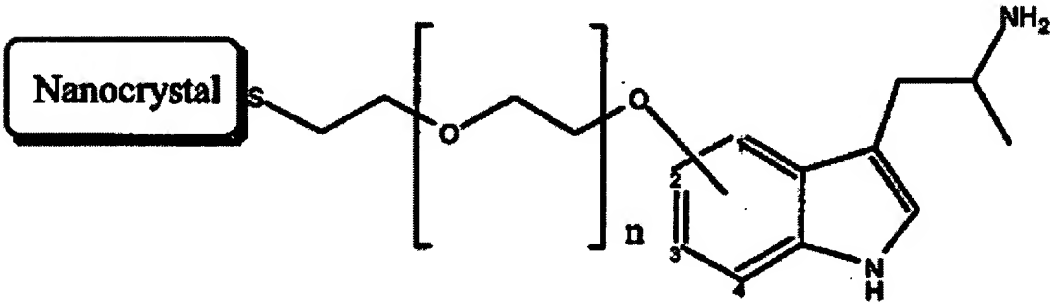

Nanocrystal
S
O
n
O
H
N
O
1
2
3
4
N
H

(V)

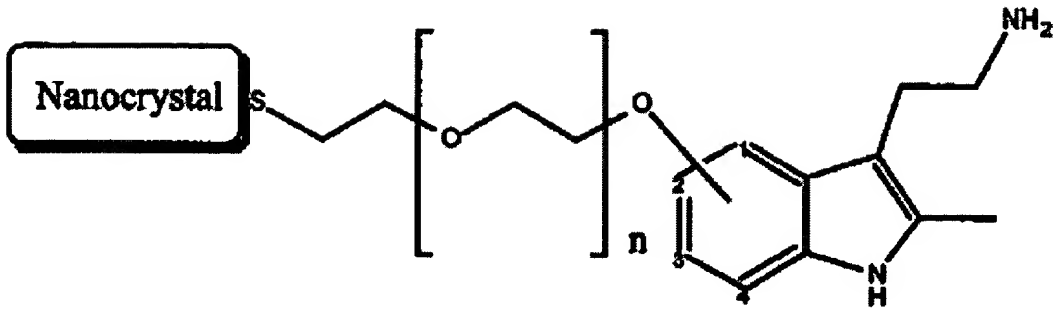

Nanocrystal
S
O
n
O
N
1
S

B2

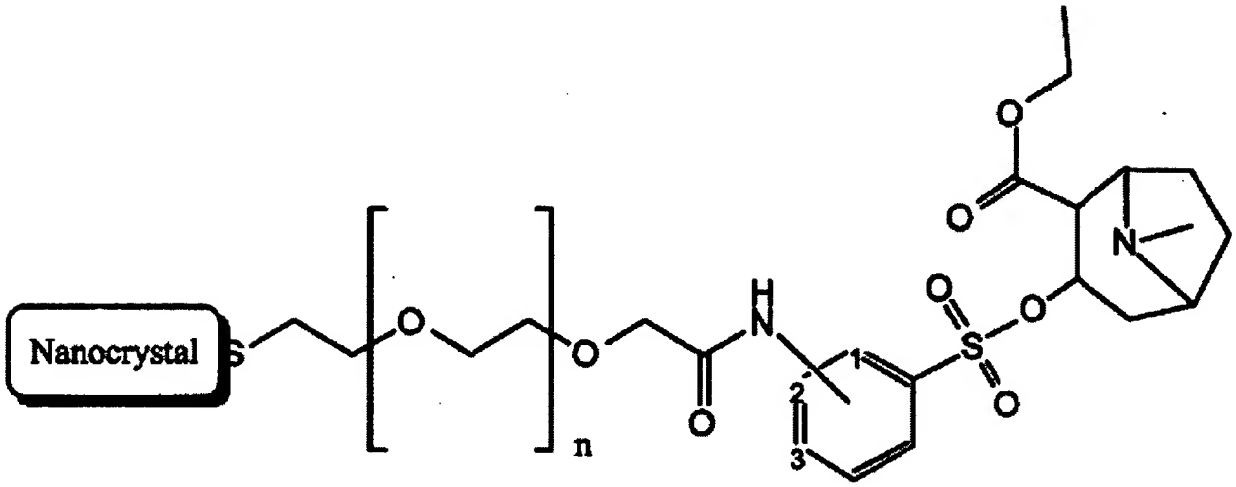
(VI)


Nanocrystal
S
O
n
O
NH2
2
3
4
N
H

(VII)

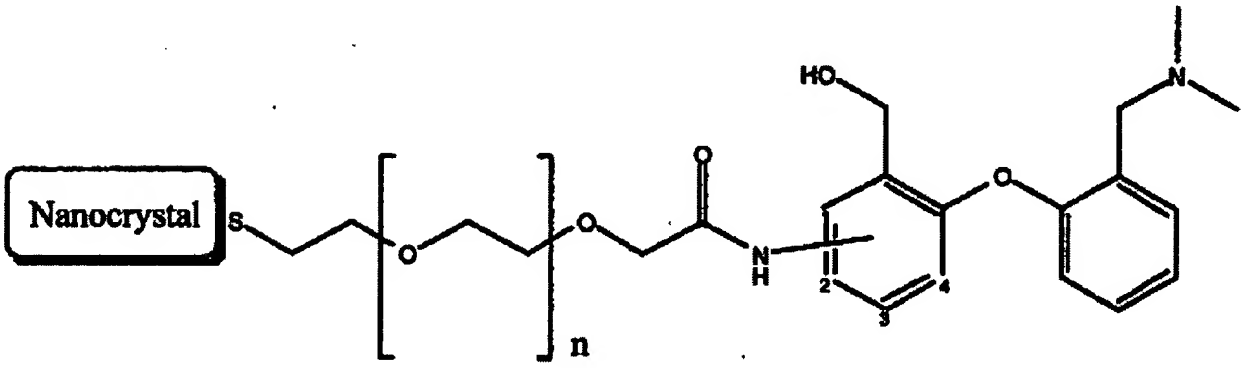

Nanocrystal
S
O
n
NH2
N
H

(X)

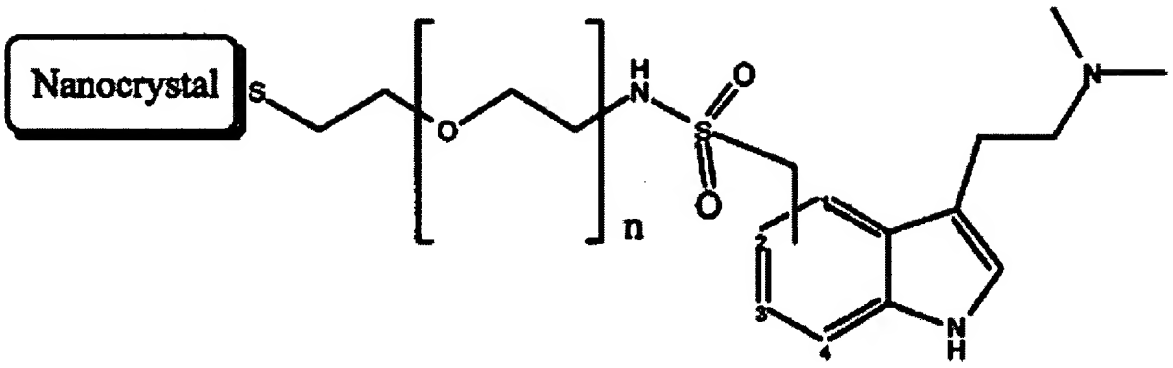

Nanocrystal
S
O
n
H
N
O
O
S
O
O
O
N

(XI)

b2


Nanocrystal
S
O
n
O
H
N
HO
O
N

(XII)



(XIII)

wherein n = 0-10 and X is H or halogen.

Claim 12 (Previously Presented). The nanocrystal compound of claim 8, wherein the nanocrystal has a cross section of less than about 200 angstroms.

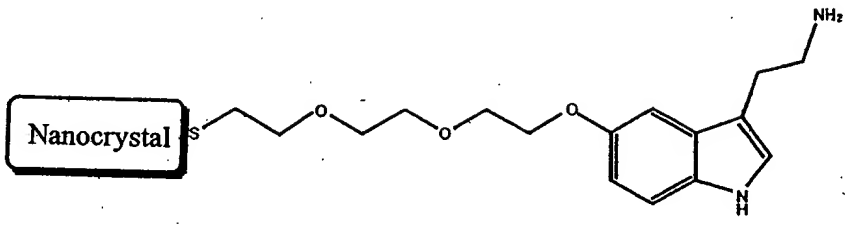
Claim 13 (Previously Presented). The compound of claim 8, wherein the nanocrystal is selected from the group consisting of CdSe, CdS, PbSe, PbS, and CdTe nanocrystals.

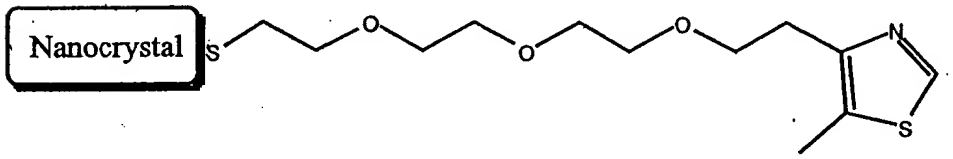
b2

Claim 14 (Previously Presented). The compound of claim 8, wherein the organic compound is capable of binding to an affinity molecule, the affinity molecule being a monoclonal antibody, polyclonal antibody, monomeric nucleic acid, oligomeric nucleic acid, protein, polysaccharide, sugar, peptide, drug, ligand.

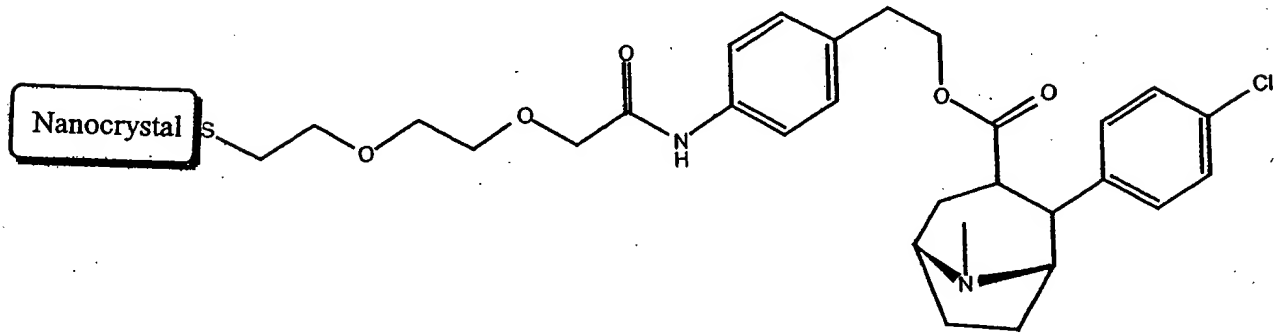
Claim 15 (Previously Presented). The compound of claim 8, wherein the organic compound is seratonin.

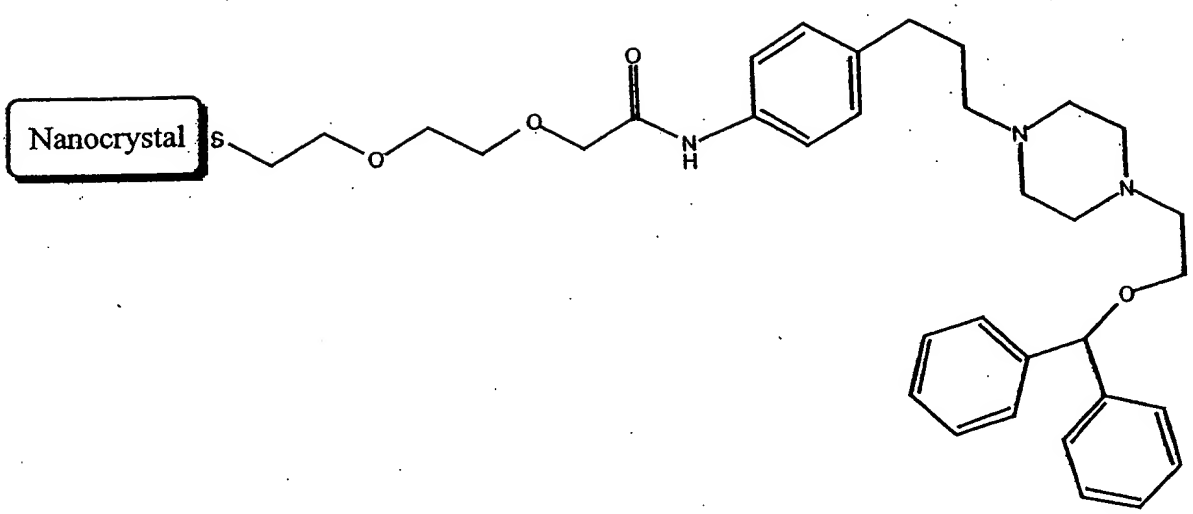
Claim 16 (Previously Presented). The compound of claim 8, selected from the group consisting of:

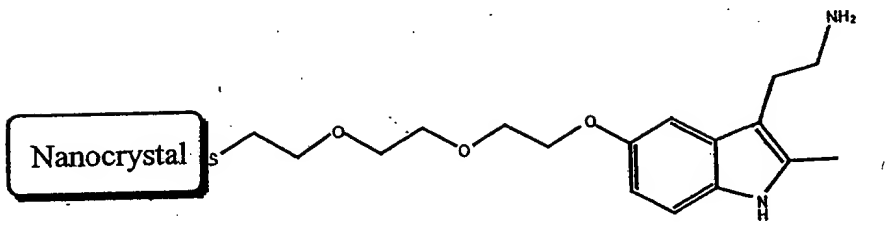


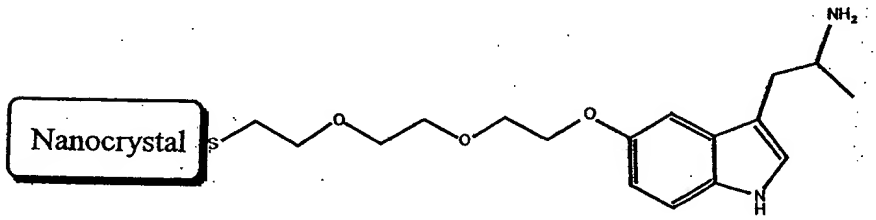


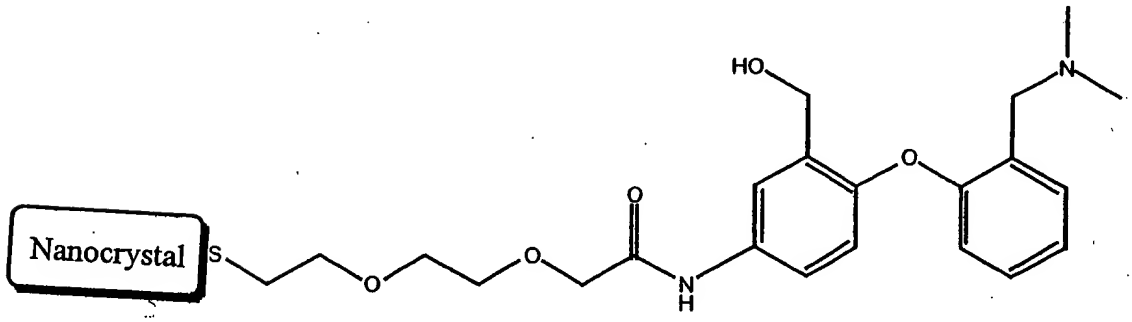
b2

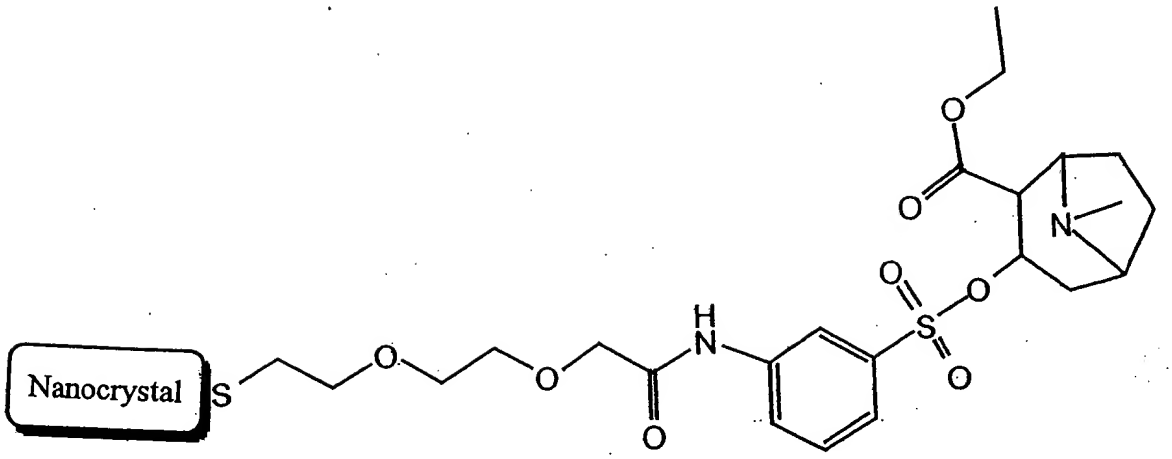


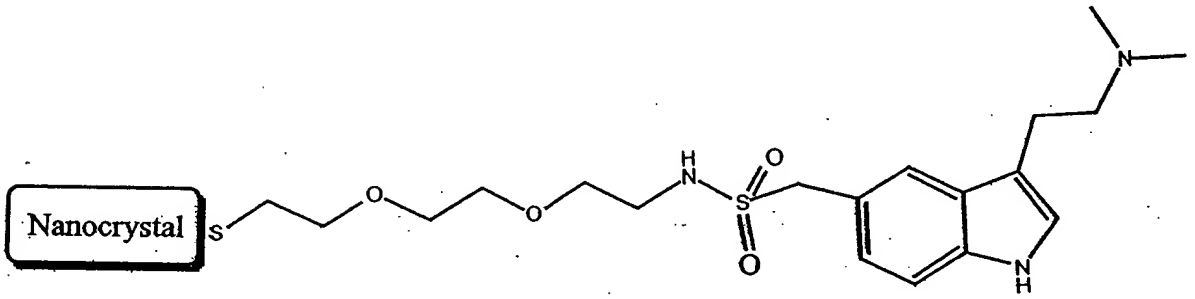

Nanocrystal
S
O
O
O
N
H
N
N
O


Nanocrystal
S
O
O
O
NH2
N
H

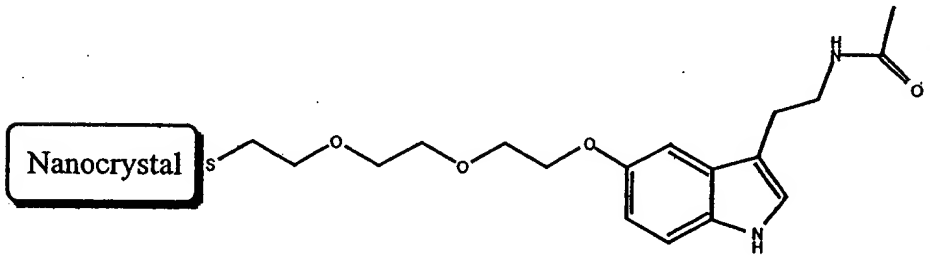

Nanocrystal
S
O
O
O
NH2
N
H


Nanocrystal
S
O
O
O
N
H
HO
O
N





and



Claims 17-21 (Canceled).